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09/977,287	10/16/2001	Takayuki Suzuki	046124-5091	2049

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MORGAN LEWIS & BOCKIUS LLP
1111 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 20004

EXAMINER	
YAM, STEPHEN K	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 03/31/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/977,287	SUZUKI ET AL.	
	Examiner	Art Unit	
	Stephen Yam	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to Amendments and remarks filed on December 18, 2003. Claims 1-11 are currently pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi Japanese Publication No. 60-242740 in view of Nishiyama et al. US Patent No. 6,333,804.

Regarding Claims 1 and 2, Takagi teaches (see Fig. 1) an optical receiver for receiving an optical signal comprising first photodetecting means (DET1) having a first photosensitive region for outputting a first electric signal corresponding to said signal light detected by said first photosensitive region, second photodetecting means (DET2) having a second photosensitive region disposed externally close to a periphery of said first photosensitive region (since the two photosensitive regions are in the same system and are close to each other in Fig. 1, they are disposed "externally close to a periphery" of each other), for outputting a second electric signal corresponding to said signal light incident on said second photosensitive region, signal amplifying means (REC) for amplifying, according to a predetermined operating current or operating voltage (from (CONT)), said first electric signal outputted from said first

photodetecting means, and current control means (CONT) for controlling, according to said second electric signal outputted from said second photodetecting means, said operating current or voltage supplied to said signal amplifying means (see Abstract). In addition, since the body of the claim does not provide support for receiving the optical signal *from a plastic optical fiber*, and the limitation only appears in the preamble of the claim, the limitation cannot be given patentable weight for Claim 1, as such a detail is considered only as providing intended use for the invention. Regarding Claim 2, Takagi teaches (see Fig. 1) the current control means controlling the operating current or operating voltage (see Abstract) such that the operating current or voltage is supplied to said signal amplifying means when said second electric signal is at a predetermined reference value (ref1) or higher (using COMP1) (see Abstract). Takagi does not teach a lens arranged on said first photodetecting means. Nishiyama et al. teach (see Figs. 1 and 2) a similar optical receiver, with a lens (LS) (see Fig. 2) arranged on a first photodetecting means (1, SM). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a lens arranged on the first photodetecting means as taught by Nishiyama et al. in the optical receiver of Takagi, to provide optical confinement of the optical signal for improved signal detection.

Regarding Claim 9, Takagi in view of Nishiyama et al. teach the optical receiver in Claim 1, according to the appropriate paragraph above. Takagi does not teach a mold part for molding the first and second photodetecting means, and a receptacle for accommodating the mold part and the plastic optical fiber. Nishiyama et al. also teach (see Fig. 2) a mold part (10a) for molding all the components in the system (see Col. 3, lines 5-8 and Fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a mold

part for molding all the components in the system as taught by Nishiyama et al. in the optical receiver of Takagi in view of Nishiyama et al., to provide protection for the receiver from damage due to external elements.

3. Claims 3, 5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi in view of Nishiyama et al. as applied to Claim 1, further in view of Shiga US Patent No. 5,164,581.

Regarding Claim 3, Takagi in view of Nishiyama et al. teach the optical receiver in Claim 1, according to the appropriate paragraph above. Takagi does not teach the first photosensitive region as substantially circular and the second photosensitive region having a form surrounding said periphery of said first photosensitive region. Shiga teaches (see Fig. 3A and 5) an optical receiver with first photodetecting means (30a) having a first photosensitive region (28) for outputting a first electric signal corresponding to said signal light detected by said first photosensitive region, second photodetecting means (30b) having a second photosensitive region (29) for outputting a second electric signal corresponding to said signal light incident on said second photosensitive region, and signal amplifying means (33) for amplifying, according to a predetermined operating current or voltage, said first electric signal outputted from said first photodetecting means, wherein the first photosensitive region is substantially circular (see Fig. 3A) and the second photosensitive region has a form surrounding said periphery of said first photosensitive region (see Fig. 3A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the photosensitive regions of Shiga in the optical receiver of Takagi in view of Nishiyama et al., to detect the presence and absence of the signal

without adversely affecting the received signal, as taught by Shiga (see Col. 1, line 65 to Col. 2, line 3 and Col. 4, lines 7-10).

Regarding Claim 5, Takagi in view of Nishiyama et al. teach the optical receiver in Claim 1, according to the appropriate paragraph above. Takagi does not teach the first and second photodetecting means formed on a single substrate. Shiga teaches (see Fig. 3A and 5) an optical receiver with first photodetecting means (30a) having a first photosensitive region (28) for outputting a first electric signal corresponding to said signal light detected by said first photosensitive region, second photodetecting means (30b) having a second photosensitive region (29) for outputting a second electric signal corresponding to said signal light incident on said second photosensitive region, and signal amplifying means (33) for amplifying, according to a predetermined operating current or voltage, said first electric signal outputted from said first photodetecting means, wherein the first and second photodetecting means are formed on a single substrate (see Fig. 3A and 3B). It would have been obvious to one of ordinary skill in the art at the time the invention was made to place the first and second photodetecting means on a single substrate as taught by Shiga in the optical receiver of Takagi in view of Nishiyama et al., to integrate the device to monitor the light output without disturbing the output signal, as taught by Shiga (see Col. 1, line 65 to Col. 2, line 3).

Regarding Claims 7 and 8, Takagi teaches the optical receiver in Claim 1, according to the appropriate paragraph above. Takagi also teaches positioning the first photosensitive region on an optical axis of the signal light (see Fig. 1). Takagi does not teach a holding apparatus or method of arranging an optical receiver by arranging or holding an output end having a divergence greater than the first photosensitive region. Shiga teaches (see Fig. 3A and 5) a

method of arranging an optical receiver by arranging/holding an output end (fiber) (see Col. 3, lines 5-18) for outputting signal light having a divergence greater than the first photosensitive region (See Col. 1, lines 60-65) and arranging an optical receiver such that the first photosensitive region is positioned on an optical axis of a signal light (see Col. 3, lines 5-10- "fiber", "central portion of active area"). It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange an output end for outputting signal light having a divergence greater than the first photosensitive region as taught by Shiga with the optical receiver of Takagi in view of Nishiyama et al., to provide leakage light to monitor the presence/absence of an input optical signal without disturbing the signal, as taught by Shiga (see Col. 1, lines 60-68 and Col. 4, lines 7-10).

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi in view of Nishiyama as applied to Claim 1, further in view of Shiga US Patent No. 5,164,581 and Steiger US Patent No. 6,493,490.

Takagi in view of Nishiyama et al. teach the optical receiver in Claim 1, according to the appropriate paragraph above. Takagi does not teach the first photosensitive region as substantially circular and the second photosensitive region having a plurality of separated detecting portions arranged along the periphery of said first photosensitive region. Shiga teaches (see Fig. 3A and 5) an optical receiver with first photodetecting means (30a) having a first photosensitive region (28) for outputting a first electric signal corresponding to said signal light detected by said first photosensitive region, second photodetecting means (30b) having a second photosensitive region (29) for outputting a second electric signal corresponding to said signal

light incident on said second photosensitive region, and signal amplifying means (33) for amplifying, according to a predetermined operating current or voltage, said first electric signal outputted from said first photodetecting means, wherein the first photosensitive region is substantially circular (see Fig. 3A) and the second photosensitive region has a form surrounding said periphery of said first photosensitive region (see Fig. 3A). Takagi and Shiga do not teach the second photosensitive regions as a plurality of separated detecting portions. Steiger teaches (see Fig. 2) an optical receiver with a photodetecting means (221A,221B,221C,221D) having a plurality of separated detecting portions arranged along the periphery of a substantially circular area (219). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use plural detecting portions as taught by Steiger with the photosensitive regions of Shiga in the optical receiver of Takagi in view of Nishiyama et al., to detect the presence and absence of the signal without adversely affecting the received signal, as taught by Shiga (see Col. 1, line 65 to Col. 2, line 3 and Col. 4, lines 7-10) while also detecting optical beam alignment for optimal signal reception, as taught by Steiger (see Col. 2, line 57 to Col. 3, line 19).

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi in view of Nishiyama et al., further in view of Holcombe US Patent No. 6,356,375.

Takagi in view of Nishiyama et al. teach the optical receiver in Claim 1, according to the appropriate paragraph above. Takagi does not teach the first and second photodetecting means, the signal amplifying means, and the current control means formed on a single substrate. Holcombe teaches an optical receiver comprising (see Fig. 7) a photodetecting means (230),

signal amplifying means (1026) for amplifying an electric signal from the photodetecting means, and current control means (1032, 1026) for controlling the operating current or voltage of the signal amplifying means, all on a single substrate (210) (see Col. 4, lines 19-28 and 39-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include all the components on a single substrate as taught by Holcombe in the optical receiver of Takagi in view of Nishiyama et al., to create an integrated design to decrease the size of the device.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi in view of Nishiyama et al. as applied to Claim 9, further in view of Williams et al. US Patent No. 6,384,948.

Takagi in view of Nishiyama et al. teach the optical receiver in Claim 1, according to the appropriate paragraph above. Takagi does not teach a receptacle for accommodating said mold part and a plastic optical fiber. Nishiyama et al. also teach receiving the optical signal from a plastic optical fiber, and a receptacle (BT) for accommodating said mold part and an optical fiber (OF). Takagi and Nishiyama et al. do not teach the optical fiber made of plastic. Williams et al. teach (see Fig. 1) a similar device, with receiving an optical signal from a plastic optical fiber (see Col. 1, lines 20-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to receive the optical signal from a plastic optical fiber and provide a receptacle for accommodating the mold part and an optical fiber, as taught by Nishiyama et al., and construct the optical fiber from plastic, as taught by Williams et al., in the optical receiver of Takagi in view of Nishiyama et al., to provide a modular design to effectively inter-connect

components, and to utilize the optical receiver in fiber-optic communication using common, affordable fiber-optic materials.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi in view of Nishiyama et al. as applied to Claim 9, further in view of Maruyama US Patent No. 6,061,160.

Takagi in view of Nishiyama et al. teach the optical receiver in Claim 1, according to the appropriate paragraph above. Takagi does not teach the lens as a semispherical lens part formed on a surface of the mold part. Maruyama teaches (see Fig. 6) a similar device, with a lens (1) arranged on a first photodetecting means (7), wherein the lens is a semispherical lens part (see Col. 3, lines 25-26) formed on a surface of a mold part (11) (see Col. 4, lines 11-13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the lens as a semispherical lens part formed on a surface of the mold part as taught by Maruyama in the optical receiver of Takagi in view of Nishiyama et al., to provide improved optical confinement to focus the signal light onto the photodetecting means.

Response to Arguments

8. Applicant's arguments filed December 18, 2003 have been fully considered but they are not persuasive.

Regarding Applicant's arguments on the Takagi reference, Applicant argues that Takagi does not teach the second photosensitive region as disposed at a periphery of the first photosensitive region. Examiner asserts that the claim language recites the second

photosensitive region "disposed *externally close* to a periphery of said photosensitive region". From Fig. 1, it is observed that the two photodetecting means are relatively close to each other, and since they are in the same receiver system, and the second photosensitive region is disposed *externally close* to a periphery of the photosensitive region.

Regarding Applicant's arguments on the Shiga reference, Applicant argues that Shiga does not teach the signal amplifying means amplifying "according to a predetermined operating current or operating voltage" as recited in Claim 1, and instead, the output optical current is amplified by the amplifier and output to the terminal as a monitor signal for determining the presence/absence of a signal, and thus, the output signal from the second photosensitive region is merely used as for determination of the input optical signal, and not for controlling the signal amplifying means. Examiner asserts that the claim language does not recite the "predetermined operating current or operating voltage" as affected by the second electric signal when defining the signal amplifying means, but is rather expressed when defining the current control means. According to the previous and current Office Action, Examiner merely stated that the signal amplifying means operates by amplifying according to a predetermined operating current or operating voltage (since the amplifier does not contain any inputs to vary the gain or other operating conditions) and made no allegations to the predetermined operating current or operating voltage being affected by the second electric signal in the *Shiga* reference. Instead, Examiner relied on the primary reference *Takagi* to illustrate the controlling of the predetermined operating current or operating voltage according to the second electric signal and further using the operating current or operating voltage to control the amplifying characteristics of the signal amplifying means.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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THANH X. LUU
PATENT EXAMINER